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## THE NORTH AMERICAN MOTHS OF THE GENUS ARACHNIS, WITH ONE NEW SPECIES

By J. F. GATES CLARKE

THE study of the genus *Arachnis* (family Arctiidae) was undertaken to determine the exact relationship of the new species described to the known species, and, in order to accomplish this, characters for all species in the group needed to be critically reviewed and evaluated.

The species of this group are extremely plastic and readily produce forms and races apparently constant in coloration. These may be confined to small islands within the range of the species or may occur along with the typical race.

The lack of sufficient material has probably prevented a proper evaluation of characters in one or two instances, but it seems apparent that at least one species, *picta*, has given rise to numerous varieties and races that are so distinct superficially that they appear to be separate species. The case of *midas*, for example, is striking. This so-called species, although easily distinguishable from *picta* on coloration, can be separated from it morphologically only by the shape of the uncus. As pointed out later, *midas* is represented only by the unique type, and the distinguishing character of the genitalia might well be only one of several variations. Since the matter of coloration seems to be of little importance in the separation of species, *midas*, like *citra*, may be nothing more than a form or race of *picta*.

The genus appears to be best represented in the southwestern part of the United States, but its distribution ranges into Mexico and to the Midwest and Florida. It is in the Rocky Mountain region that

the predisposition to variation is greatest, more stability being apparent to the east and west beyond the intermountain area.

The larvae are probably rather general feeders, a character common to many arctiids, but only a few have been reared.

Dr. J. A. Comstock, director of science in the Los Angeles Museum, kindly sent material for study, for which thanks are due.

A diagnosis of this well-known genus is not included, but descriptions of the genitalia follow.

The drawings for this paper were made by Mrs. Eleanor A. Carlin, of the Bureau of Entomology and Plant Quarantine.

### Genus ARACHNIS Geyer

*Arachnis* GEYER, in Hübner, *Zuträge exotischer Schmetterlinge*, vol. 5, p. 28, 1837.

*Male genitalia*.—Harpe broadly attached at base, long, slender, always with inward lateral projection. Anellus semicylindrical, sometimes concave laterally. Aedeagus long, stout, dorsoventrally curved; vesica with numerous minute scobinations. Vinculum with well-developed winglike lateral expansion. Tegumen with well-developed dorsal flange.

*Female genitalia*.—Ostium large, extending well beyond ventral surface of genital plate. Ductus bursae strongly sclerotized, somewhat depressed, concave ventrally. Ductus seminalis greatly enlarged, membranous or partly sclerotized, and entering at confluence of ductus bursae and bursa copulatrix. Bursa copulatrix with two small, round, scobinate signa. Occasionally a third signum is weakly developed. Dorsal glands well developed, with several branches.

*Remarks*.—The lateral projection of the harpe does not seem to represent a clasper or an ampulla, but rather no more than an outgrowth of the ventral margin.

### KEYS TO THE SPECIES OF ARACHNIS

#### *Coloration*

- |   |  |
|---|--|
| 1. Hind wing with yellowish ground color.....   | 2                                      |
| Hind wing with red or reddish ground color.....   | 3                                      |
| 2. Thorax with conspicuous white posteromedian dorsal spot; dark markings of fore wing slate..... | zuni Neumoegen (p. 69)                 |
| Thorax without white posteromedian dorsal spot; dark markings of fore wing gray.....              | midas Barnes and Lindsey (p. 69)       |
| 3. Fore wing with white or whitish ground color.....  | 5                                      |
| Fore wing with ground color otherwise.....  | 4                                      |
| 4. Fore wing with yellowish ground color.....   |  |
| .....   | picta citra Neumoegen and Dyar (p. 67) |
| Fore wing with cerise ground color.....   | apachea, new species (p. 68)           |
| 5. Abdomen with lateral row of orange spots.....  | 6                                      |
| Abdomen with lateral row of gray to blackish spots.....   | 7                                      |

6. Hind wing almost wholly overlaid with blackish fuscous; dark markings of fore wing dark slate gray, sharply contrasted against white ground color----- *aulaea pompeia* Druce (p. 63)  
Hind wing with dark markings lighter and less abundant; dark markings of fore wing lighter and not so sharply contrasted with whitish ground color----- *aulaea* Geyer (p. 62)
7. Fore wing with at least basal half of underside entirely shaded with orange----- 8  
Fore wing with basal half or two-thirds of underside of costa only shaded with orange----- 10
8. Gray markings of fore wing strongly outlined with black----- 9  
Gray markings of fore wing without black outlines.  
*picta insularis* Clarke (p. 66)
9. Hind wing of male with outer band of gray spots broken but strongly defined; female with outer band entire or, if broken, then only once----- *picta* Packard (p. 63)  
Hind wing of male with outer band consisting of three or four small spots; female with outer band consisting of four spots, apical pair sometimes fused.  
*picta verna* Barnes and McDunnough (p. 65)
10. Hind wing of male semihyaline; female with basal band, on underside, connected to base by a narrow gray line.  
*picta maia* Ottolengui (p. 66)  
Hind wing of male not semihyaline; female with basal band, on underside, connected to base by conspicuous gray triangle.  
*picta hampsoni* Dyar (p. 66)

*Male genitalia*

1. Uncus flattened, with prominent dorsal ridge; lateral projection of harpe as narrow as, or narrower than, distal part of harpe beyond it (pl. 11, fig. 4)----- *aulaea* Geyer (p. 62)  
Uncus conical, without dorsal ridge; lateral projection wider than distal part of harpe beyond it (pl. 10, fig. 3; pl. 12, figs. 7c, 8)----- 2
2. Distal portion of harpe greatly dilated (pl. 10, fig. 3).  
*apachea*, new species (p. 68)  
Distal portion of harpe not greatly dilated (pl. 12, figs. 7, 8)----- 3
3. Lateral projection of harpe bent toward base; distal end narrow, somewhat compressed (pl. 11, fig. 5)----- *zuni* Neumoegen (p. 69)  
Lateral projection of harpe not bent toward base; distal end swollen----- 4
4. Uncus short, stocky, evenly curved (pl. 12, fig. 7c)----- *picta* Packard (p. 63)  
Uncus long, slender, angulate (pl. 12, fig. 8c).  
*midas* Barnes and Lindsey (p. 69)

*Female genitalia*<sup>1</sup>

1. Ductus seminalis at least partly sclerotized----- 2  
Ductus seminalis wholly membranous----- *picta* Packard (p. 63)
2. Median fleshy protuberance of ostium with broad, sickle-shaped, sclerotized area on each side (pl. 10, fig. 2)----- *aulaea* Geyer (p. 62)  
Median fleshy protuberance of ostium without such area (pl. 11, fig. 6).  
*zuni* Neumoegen (p. 69)

<sup>1</sup> The females of *midas* and *apachea* are unknown to me.

## ARACHNIS AULAEA Geyer

## PLATE 10, FIGURES 2-2a; PLATE 11, FIGURES 4-4b

- Arachnis aulaea* GEYER, in Hübner, *Zuträge exotischer Schmetterlinge*, vol. 5, p. 28, figs. 913, 914, 1837.—CLEMENS, *Proc. Acad. Nat. Sci. Philadelphia*, 1860, p. 526.—WALKER, *List of the specimens of lepidopterous insects in the collection of the British Museum*, vol. 31 (Suppl. 1), p. 300, 1864.—STRETCH, *Illustrations of the Zygaenidae and Bombycidae of North America*, vol. 1, p. 85, 1873.—DRUCE, *Biologia Centrali-Americana, Heterocera*, vol. 1, p. 98, 1884.—SMITH, *List of the Lepidoptera of Boreal America*, No. 1118, 1891.—KIRBY, *A synonymic catalogue of the Lepidoptera Heterocera (moths)*, vol. 1, p. 218, 1892.—DRUCE, *Ann. Mag. Nat. Hist.*, ser. 6, vol. 13, p. 174, 1894.—ORTOLENGUI, *Ent. News*, vol. 7, p. 126, pl. 4, 1896.—DRUCE, *Biologia Centrali-Americana, Heterocera*, vol. 2, p. 377, 1897.—HAMPSON, *Catalogue of the Arctiidae (Arctianae) and Agaristidae in the collection of the British Museum*, vol. 3, pp. 389, 390, 391, fig. 163, 1901 [biology].—BARNES and McDUNNOUGH, *Check list of the Lepidoptera of Boreal America*, No. 967, 1917.—STRAND, *Lepidopterorum catalogus*, pt. 22, p. 278, 1919.—SEITZ, *Die Gross-Schmetterlinge der Erde*, vol. 6, p. 314, pl. 40b, 1919.—BARNES and BENJAMIN, *Pan-Pac. Ent.*, vol. 3, p. 17, 1926.—MCDUNNOUGH, *Check list of the Lepidoptera of Canada and the United States of America (Part 1, Macrolepidoptera)*, No. 1080, 1938.
- Epantheria aulaea* (Geyer) BOISDUVAL, *Ann. Soc. Ent. Belg.*, vol. 12, p. 78, 1869.—OBERTHUR, *Études d'Entomologie*, vol. 6, p. 111, pl. 19, figs. 4, 7, 1881.—BURMEISTER, *Ann. Mus. Publ. Buenos Aires*, vol. 3, p. 31, 1883.
- Epantheria aulea* SCHAUS (misspelling for *aulaea*), *Papilio*, vol. 3, p. 188, 1883 [larva].
- Arachnis aulea* (Schaus) H. EDWARDS, *U. S. Nat. Mus. Bull.* 35, p. 61, 1889.—SCHAUS, *Ent. Amer.*, vol. 5, p. 190, 1889.—NEUMOEGEN and DYAR, *Journ. New York Ent. Soc.*, vol. 1, p. 178, 1893.—DYAR and DOLL, *Ent. News*, vol. 4, p. 312, 1893 [larva].—DYAR, *Can. Ent.*, vol. 26, p. 307, 1894 [larva]; *Proc. Ent. Soc. Washington*, vol. 14, p. 55, 1912.
- Epantheria incarnata* WALKER, *List of the specimens of lepidopterous insects in the collection of the British Museum*, vol. 3, p. 690, 1855.—BURMEISTER, *Ann. Mus. Publ. Buenos Aires*, vol. 3, p. 31, 1883 [as synonym of *E. aulaea*].
- Arachnis incarnata* SMITH, *List of the Lepidoptera of Boreal America*, No. 1118, 1891.—KIRBY, *A synonymic catalogue of the Lepidoptera Heterocera (moths)*, vol. 1, p. 218, 1892.—BARNES and McDUNNOUGH, *Check list of the Lepidoptera of Boreal America*, No. 967, 1917.—STRAND, *Lepidopterorum catalogus*, pt. 22, p. 278, 1919.—SEITZ, *Die Gross-Schmetterlinge der Erde*, vol. 6, p. 314, 1919.—MCDUNNOUGH, *Check list of the Lepidoptera of Canada and the United States of America (Part 1, Macrolepidoptera)*, No. 1080, 1938 [as synonym of *A. aulaea*].

*Male genitalia*.—Harpe with slender, inward, lateral projection; cucullus narrow, scarcely wider than lateral projection of harpe, slightly swollen distally. Anellus with sides parallel. Aedeagus with well-developed distolateral flap. Vinculum broad, short, truncate. Uncus broad, flattened, with prominent dorsal ridge extending beyond end to form terminal point. Flange of tegumen broadly rounded.

*Female genitalia*.—Median protuberance of ostium fleshy, bulbous, with conspicuous, sickle-shaped, sclerotized area laterally. Ductus

seminalis sclerotized for distance almost equal to length of ductus bursae.

Alar expanse, 38–60 mm.

*Distribution*.—Southwestern part of the United States and Mexico.

**Arizona:** Huachuca Mountains, ♀ (no date or collector); Palmerlee, Cochise County, ♂ ("VIII"; no collector).

**New Mexico:** "New Mexico," ♀ (no other data).

**Texas:** "Southern Texas," ♂ (no other data).

*Types*.—Unknown (*aulaea*); in the British Museum (*incarnata*).

*Type localities*.—Mexico (*aulaea* and *incarnata*).

*Food plants*.—Numerous (acc. Schaus, 1889).

*Remarks*.—This species seems to be essentially a Mexican insect, since the preponderance of specimens before me is from Mexico. The few records from the United States are scattered and not altogether reliable.

#### ARACHNIS AULAEA POMPEIA Druce

##### PLATE 10, FIGURES 1–1a

*Arachnis pompeia* DRUCE, Ann. Mag. Nat. Hist., ser. 6, vol. 13, p. 174, 1894; Biologia Centrali-Americana; Heterocera, vol. 2, p. 377, pl. 75, figs. 2, 3, 1897.—HAMPSON, Catalogue of the Arctiidae (Arctiinae) and Agaristidae in the collection of the British Museum, vol. 3, pp. 389, 390, 1901.—STRAND, Lepidopterorum catalogus, pt. 22, p. 279, 1919.—SEITZ, Die Gross-Schmetterlinge der Erde, vol. 6, p. 315, 1919.—BARNES and BENJAMIN, Pan-Pac. Ent., vol. 3, p. 17, 1926.—McDUNNOUGH, Check list of the Lepidoptera of Canada and the United States of America (Part 1, Macrolepidoptera), No. 1081, 1938.

*Arachnis aulaea* HOLLAND [not Geyer], The moth book, p. 124, pl. 16, fig. 1, 1903.—BARNES and McDUNNOUGH, Contr. Nat. Hist. Lepid. North Amer., vol. 1, No. 4, p. 7, pl. 2, fig. 1, 1912.

Alar expanse, 47–52 mm.

*Type*.—In the British Museum.

*Type locality*.—Mexico, near Durango City.

*Remarks*.—The racial status of *pompeia* (known from the female only) is doubtful, and the genitalia indicate that it may be no more than a form of *aulaea* occurring along with the typical race. This form can be distinguished from *aulaea* by the darker and more contrasting markings.

The specimen figured by Barnes and McDunnough<sup>2</sup> as *aulaea* is in the U. S. National Museum. This specimen is *pompeia* and was misidentified by Barnes and McDunnough.

#### ARACHNIS PICTA Packard

##### PLATE 12, FIGURES 7–7c, 9–9a

*Arachnis picta* PACKARD, Proc. Ent. Soc. Philadelphia, vol. 3, p. 126, 1864.—

WALKER, List of the specimens of lepidopterous insects in the collection of the British Museum, vol. 35 (Suppl. 5), p. 1912, 1866.—STRETCH, Illustrations

<sup>2</sup> Contr. Nat. Hist. Lepid. North Amer., vol. 1, No. 4, p. 7, pl. 2, 1912.



of the Zygaenidae and Bombycidae of North America, vol. 1, p. 83, pl. 3, fig. 6, 1873.—OBERTHUR, *Études d'Entomologie*, vol. 6, p. 112, pl. 19, figs. 5, 8, 1881.—DRUCE, *Biologia Centrali-Americana, Heterocera*, vol. 1, p. 98, 1884.—H. EDWARDS, U. S. Nat. Mus. Bull. 35, p. 61, 1889 [food plant].—DYAR, *Ent. Amer.*, vol. 6, p. 73, 1890 [larva, cocoon, pupa].—SMITH, List of the Lepidoptera of Boreal America, No. 1117, 1891.—KIRBY, A synonymic catalogue of the Lepidoptera Heterocera (moths), vol. 1, p. 218, 1892.—NEUMOEGEN and DYAR, *Journ. New York Ent. Soc.*, vol. 1, pp. 178, 179, 1893.—OTTOLENGUI, *Ent. News*, vol. 7, p. 124, pl. 4, 1896.—HAMPSON, Catalogue of the Arctiidae (Arctiidae) and Agaristidae in the collection of the British Museum, vol. 3, pp. 389, 392, 1901.—DYAR, U. S. Nat. Mus. Bull. 52, No. 857, 1903.—SMITH, Check list of the Lepidoptera of Boreal America, No. 946, 1903.—HOLLAND, *The moth book*, p. 124, pl. 16, fig. 2, 1903.—BARNES and McDUNNOUGH, Check list of the Lepidoptera of Boreal America, No. 968, 1917; *Contr. Nat. Hist. Lepid. North Amer.*, vol. 4, p. 90, 1918.—STRAND, *Lepidopterorum catalogus*, pt. 22, p. 279, 1919.—SEITZ, *Die Gross-Schmetterlinge der Erde*, vol. 6, p. 315, pl. 40b, 1919.—ESSIG, *Insects of western North America*, pp. 581, 583, 678, 1926 [parasites of, larva, food plants].—MCDUNNOUGH, Check list of the Lepidoptera of Canada and the United States of America (Part 1, Macrolepidoptera), No. 1082, 1938.

*Ecpantheria picta* (Packard) BURMEISTER, *Ann. Mus. Publ. Buenos Aires*, vol. 3, p. 31, 1883 (as synonym of *E. aulaea*).

*Male genitalia*.—Lateral process of harpe with posterior edge smooth, much broader than portion of harpe beyond it; distal end fleshy, slightly dilated apically. Anellus strongly concave laterally. Aedeagus with poorly developed distolateral flap; scobinations of the vesica weak. Vinculum narrowly rounded. Uncus short, stocky, evenly curved.

*Female genitalia*.—Median protuberance of ostium broad, flattened, without sickle-shaped sclerotized lateral area. Ductus seminalis membranous.

Alar expanse, 33–62 mm.

*Distribution*.—Southern part of the United States northward to Illinois, Utah, and northern California and southward into Mexico.

Arizona: Oak Creek Canyon, ♀ (6,000 feet, July, F. H. Snow); Prescott, ♀ ("VII," collector not given).

California: Alameda County, 2♂♂, ♀ (September, October; no collector); Los Angeles, ♂, 2♀♀ (25-X-1889, H. G. Dyar No. 4084; 26-X-1889, H. G. Dyar Nos. 4190, 4208); Los Angeles County, ♂ (no date or collector); Sacramento, ♀ (no date or collector); San Diego, ♂ (16-X-1909, George H. Field), 2♀♀ (14-X-22; 10-X-23; no collector); San Francisco County, 2♂♂, 2♀♀ (September and October; no collector); several males and females labeled "Middle California" and "Southern California."

Colorado: ♀ (no date; "Bruce").

Florida: Palm Beach, ♂ (4-II-1890, H. G. Dyar No. 4552).

Illinois: Quincy, ♀ (no date; Poling).

New Mexico: Jemez Springs, ♀ (no date or collector).

Utah: ♀ (no other data).

*Type*.—In the Museum of Comparative Zoology, Cambridge, Mass.

*Type locality*.—San Francisco, Calif.

*Food plants*.—Alfalfa, clover, geranium, lupine, *Malva*, rose, sage-brush, etc.

*Remarks*.—The genitalia of *picta* and its varieties show considerable variation, but no characters present are sufficiently stable to enable the absolute separation of one from the other by the use of these organs. The typical subspecies (*picta picta*) shows the most consistent form. The lateral projection of the harpe of this subspecies is usually much thicker than in the others and the posterior edge of the projection is comparatively smooth. In the other subspecies the lateral projection varies in thickness and is usually roughened on the posterior edge.

In addition to the material listed under distribution I have before me two specimens from Avalon, Santa Catalina Island, Calif. (2-X-1931, 11-X-1931, Don Meadows), which appear to be an island race of *picta*. The gray markings are very light and coalesced and not sharply defined. The thorax, head, and fore wing have a powdered appearance. Until more material comes to hand and it is possible to determine the constancy of this form I am leaving it unnamed. This race falls between *picta* and *verna* in my key.

These specimens were sent to me by Dr. J. A. Comstock, of the Los Angeles Museum.

#### ARACHNIS PICTA VERNA Barnes and McDunnough

*Arachnis picta verna* BARNES and McDUNNOUGH, Contr. Nat. Hist. Lepid. North Amer., vol. 4, p. 90, pl. 13, figs. 5, 6, 1918.—McDUNNOUGH, Check list of the Lepidoptera of Canada and the United States of America (Part 1, Macrolepidoptera), No. 1082c, 1938.

Alar expanse, 45–73 mm.

*Distribution*.—Middle California to Utah.

**California:** Three Rivers, Tulare County, 3 ♂♂, 6 ♀♀ (no dates or collector).

**Utah:** Dividend, 3 ♂♂, ♀ (August and September dates; Tom Spalding); Eureka, 6 ♂♂, 3 ♀♀ (August and September dates, 1910 to 1921, Tom Spalding); Provo, ♂, ♀ (20-IX-1908; 25-VIII-1908, Tom Spalding).

*Type*.—In the U. S. National Museum.

*Type locality*.—Three Rivers, Tulare County, Calif.

*Remarks*.—This variety averages slightly larger than typical *picta* and has more of the whitish or pale-gray ground color showing, thus appearing considerably lighter. The dark markings of the hind wing are reduced in *verna*.

While this race is at present known only from two rather small areas it may be found throughout much of the area between California and the Rocky Mountains, even though this particular species appears to produce rather restricted races.

In addition to the specimens listed above, I have before me one other from Logan Canyon, Utah (August 16, 1939, G. F. Knowlton No. 34), which appears to belong here. This specimen, however, lacks the usual median dorsal black line of the abdomen, and the hind wing is more cerise, with the dark spots greatly reduced.

ARACHNIS PICTA INSULARIS Clarke

*Arachnis picta insularis* CLARKE, Bull. Southern California Acad. Sci., vol. 39, p. 187, 1941 [egg, food plant].

Alar expanse, 34–54 mm.

*Type*.—In the U. S. National Museum.

*Type locality*.—Anacapa Island, Calif.

*Food plant*.—*Plantago* (laboratory).

*Remarks*.—This subspecies is known only from the type locality.

ARACHNIS PICTA MAIA Ottolengui

*Arachnis maia* OTTOLENGUI, Ent. News, vol. 7, p. 125, pl. 4, 1896.

*Arachnis picta maia* HAMPSON, Catalogue of the Arctiidae (Arctiinae) and Agaristidae in the collection of the British Museum, vol. 3, p. 392, 1901.—DYAR, U. S. Nat. Mus. Bull. 52, No. 857a, 1903.—SMITH, Check list of the Lepidoptera of Boreal America, No. 946a, 1903.—BARNES and McDUNNOUGH, Check list of the Lepidoptera of Boreal America, No. 968a, 1917; Contr. Nat. Hist. Lepid. North Amer., vol. 4, p. 90, pl. 13, figs. 7, 8, 1918.—STRAND, Lepidopterorum catalogus, pt. 22, p. 279, 1919.—SEITZ, Die Gross-Schmetterlinge der Erde, vol. 6, p. 315, 1919.—BARNES and LINDSEY, Ent. News, vol. 32, p. 297, 1921.—McDUNNOUGH, Check list of the Lepidoptera of Canada and the United States of America (Part 1, Macrolepidoptera), No. 1082a, 1938.

Alar expanse, 44–58 mm.

*Distribution*.—Southern Rocky Mountain region.

Colorado: Chaffee County, ♂, ♀ (no date; Bruce); Glenwood Springs, ♂ (August 1894; W. Barnes); Salida, ♂, 2 ♀♀ (no date or collector); 11 ♂♂ ("Colo." Bruce).

New Mexico: Las Vegas, ♂ ('89, H. Meske).

*Type*.—In the U. S. National Museum.

*Type locality*.—Las Vegas, N. Mex.<sup>3</sup>

*Remarks*.—Males of this race are easily distinguishable from *picta* by their coloration, but the females are distinguishable only by the key character, which, although probably rather constant, might fail to separate the two in borderline cases.

ARACHNIS PICTA HAMPSONI Dyar

*Arachnis picta hampsoni* DYAR, U. S. Nat. Mus. Bull. 52, No. 857c, 1903.—SMITH, Check list of the Lepidoptera of Boreal America, No. 946c, 1903.—BARNES and McDUNNOUGH, Check list of the Lepidoptera of Boreal America, No. 968c, 1917; Contr. Nat. Hist. Lepid. North Amer., vol. 4, p. 90, 1918.—STRAND,

<sup>3</sup> See "Errata," Ent. News, vol. 7, p. 160, 1896.



Lepidopterorum catalogus, pt. 22, p. 279, 1919.—SEITZ, Die Gross-Schmetterlinge der Erde, vol. 6, p. 315, 1919.—McDUNNOUGH, Check list of the Lepidoptera of Canada and the United States of America (Part 1, Macrolepidoptera), No. 1082d, 1938.

Alar expanse, 45–65 mm.

*Distribution*.—Southwestern part of the United States.

Arizona: Flagstaff, ♂ (July; no other data); Huachuca Mountains, ♀ (no date or collector); Mojave County, 2♂♂ (August 8–16; no collector); Paradise, Cochise County, ♂, ♀ (August; no collector); Cochise County, ♂, 3♀♀ (26–VI–1917; 31–VII–1917; no collector); Phoenix, ♂ (no date or collector); Prescott, 7♂♂, 4♀♀ (July and August dates; no collector); Yavapai County, 3♂♂, 2♀♀ (August; O. Buchholz).

California: Los Angeles, 2♂♂, 4♀♀ (October; V. M. Owen); San Diego, 11♂♂, 5♀♀ (September, October, 1921; no collector).

New Mexico: Jemez Springs, ♂, ♀ (no date or collector).

*Neotype*.—In the U. S. National Museum.

*Type locality*.—Jemez Springs, N. Mex.

*Remarks*.—This race was described by Hampson<sup>4</sup> as “Subsp. 2” of *picta* but was not named. Dyar<sup>5</sup> named this race *hampsoni* but did not designate a type. I now designate a male specimen from Jemez Springs, N. Mex., in the U. S. National Museum, as neotype, since New Mexico is the first locality cited by Hampson.

#### ARACHNIS PICTA CITRA Neumoegen and Dyar

*Arachnis picta citra* NEUMOEGEN and DYAR, Ent. News, vol. 4, p. 140, 1893; Journ. New York Ent. Soc., vol. 1, p. 179, 1893.—OTTOLENGUI, Ent. News, vol. 7, p. 124, 126, pl. 4, 1896.—HAMPSON, Catalogue of the Arctiidae (Arctiidae) and Agaristidae in the collection of the British Museum, vol. 3, p. 393, 1901.—DYAR, U. S. Nat. Mus. Bull. 52, No. 857b, 1903.—SMITH, Check list of the Lepidoptera of Boreal America, No. 946b, 1903.—BARNES and McDUNNOUGH, Check list of the Lepidoptera of Boreal America, No. 968b, 1917; Contr. Nat. Hist. Lepid. North Amer., vol. 4, p. 90, 1918.—STRAND, Lepidopterorum catalogus, pt. 22, p. 279, 1919.—SEITZ, Die Gross-Schmetterlinge der Erde, vol. 6, p. 315, pl. 40b, 1919.—McDUNNOUGH, Check list of the Lepidoptera of Canada and the United States of America (Part 1, Macrolepidoptera), No. 1082b, 1938.

Alar expanse, 46–74 mm.

*Distribution*.—Southwestern part of the United States.

California: ♂ (no other data).

Colorado: Glenwood Springs, 25♂♂, 16♀♀ (August and September dates, W. Barnes); 5♂♂, 7♀♀ (“Colo.” Bruce).

Utah: Cisco, ♂ (16–VIII–1939, G. F. Knowlton and F. C. Harmston).

*Type*.—In the U. S. National Museum.

*Type locality*.—Western Colorado.

<sup>4</sup> Hampson, G. F., Catalogue of the Arctiidae (Arctiidae) and Agaristidae in the collection of the British Museum, vol. 3, p. 392, 1901.

<sup>5</sup> Dyar, H. G., U. S. Nat. Mus. Bull. 52, No. 857c, 1903.

*Remarks.*—The single male from the Oberthur collection labeled "California" is probably mislabeled. The preponderance of specimens from Colorado and the single specimen from Cisco, Utah, indicate that the population of this variety is restricted in distribution to the mountainous area centering about Colorado.

ARACHNIS APACHEA, new species

PLATE 10, FIGURES 3-3c

Antenna with basal segment cerise anteriorly, buff posteriorly; shaft blackish fuscous; basal two-fifths cream colored above and faintly annulated with cerise; outer three-fifths overlaid with pale gray above. Labial palpus whitish ochreous; basal segment with a conspicuous black spot exteriorly; second segment bright carmine outwardly and above; third segment carmine-tipped above. Face gray, broadly edged with black. Head pink with a black median spot posteriorly. Collar pale pink, darker outwardly and edged with black beneath; on each side a conspicuous black-edged gray spot surrounded by a narrow, attenuated, cream-colored area. Thorax cerise; mesially a narrow, longitudinal, ochreous line; on each side a longitudinal, dorsal, black-edged, gray stripe; tegula pink, edged with cerise and containing a large, elongate, triangular, black-edged, gray spot. Fore wing cerise with veins faintly buff; costa narrowly edged with buff; along costa five conspicuous, irregular, black-edged, gray spots; extending across wing from these costal spots, five rows of irregular, black-edged, gray spots and dashes; on costa, at apex, an oval gray spot narrowly edged inwardly with black; along termen, between veins 3 and 8, a series of elongate, U-shaped, black-edged, gray dashes; at tornus a conspicuous, round, black-edged gray spot; cilia consisting of alternating buff and gray dashes; the underside more or less suffused with orange-ochreous, the markings less conspicuous and, except for the inner ones, sooty black; the two basal costal spots black. Hind wing semihyaline, cerise; costa rather broadly edged with pale ochreous and with two narrow, poorly defined, fuscous, transverse dashes about middle; on outer margin, at end of vein 1b, a small but conspicuous black spot; on the underside, the costa marked with conspicuous, black-edged, gray dashes. Legs creamy white, overlaid with cerise and pink and variously marked with black-edged gray spots; tarsi annulated with black. Abdomen cerise above with a faint, longitudinal median, black basal dash; beneath pink and buff mixed. Anal tuft ochreous beneath mixed with black scales; above, marked with an elongate, median, black, triangular dash.

*Male genitalia.*—Harpe with moderately broad, inward projection, roughened on posterior edge; distal end of harpe greatly dilated. Anellus strongly concave laterally. Aedeagus with small distolateral

flap. Vinculum broadly rounded. Uncus stout, conical. Flange of tegumen broadly rounded.

Alar expanse, 54-55 mm.

*Type*.—U. S. N. M. No. 54258.

*Type locality*.—Phantom Ranch, Grand Canyon, Ariz.

*Food plant*.—Unknown.

*Remarks*.—Described from the type male (12-IX-1938) and one male paratype (Roaring Springs, Grand Canyon, "VIII-1938") both collected and submitted by Louis Schellbach, assistant park naturalist.

This is one of the most brilliantly colored species of the genus and can be distinguished easily from all others by the concolorous ground of the fore and hind wings. It appears to be most nearly related to *picta*.

#### ARACHNIS MIDAS Barnes and Lindsey

##### PLATE 12, FIGURES 8-8c

*Arachnis midas* BARNES and LINDSEY, Ent. News, vol. 32, p. 297, 1921.—McDUNOUGH, Check list of the Lepidoptera of Canada and the United States of America (Part 1, Macrolepidoptera), No. 1083, 1938.

*Male genitalia*.—Lateral projection of harpe not bent toward base, broader than distal end of harpe beyond it and roughened on posterior edge; distal end of harpe swollen. Anellus narrower distally than proximally. Aedeagus with well-developed distolateral flap. Vinculum moderately narrow, rounded. Uncus elongate, angular. Flange of tegumen broad.

Alar expanse, 55 mm.

*Distribution*.—Known only from the type locality.

*Type*.—In the U. S. National Museum.

*Type locality*.—Eureka, Utah.

*Food plant*.—Unknown.

*Remarks*.—The genitalia of this species are strikingly similar to those of several of the varieties of *picta* but are at once distinguished by the elongate and angulate uncus, as shown in the figure.

I believe this to be another color form of *picta* but am retaining the specific name for the present because it is represented by the unique type only, which does not offer sufficient evidence for a change. The distolateral flap of the aedeagus is especially typical of *picta*.

#### ARACHNIS ZUNI Neumoegen

##### PLATE 11, FIGURES 5-5b, 6-6a

*Arachnis zuni* NEUMOESEN, Ent. Amer., vol. 6, p. 173, 1890.—SMITH, List of the Lepidoptera of Boreal America, No. 1119, 1891.—KIRBY, A synonymic catalogue of the Lepidoptera Heterocera (moths), vol. 1, p. 219, 1892.—NEUMOESEN and DYAR, Journ. New York Ent. Soc., vol. 1, p. 178, 179, 1893.—DRUCE, Bi-

ologia Centrali-Americana, Heterocera, vol. 2, p. 378, pl. 75, figs. 5, 8, 1897.—HAMPSON, Catalogue of the Arctiadae (Arctianae) and Agaristidae in the collection of the British Museum, vol. 3, pp. 389, 393, pl. 47, fig. 15, 1901.—COCKERELL, Ent. News, vol. 12, p. 209, 1901 [egg].—DYAR, U. S. Nat. Mus. Bull. 52, No. 858, 1903.—SMITH, Check list of the Lepidoptera of Boreal America, No. 947, 1903.—HOLLAND, The moth book, p. 124, pl. 16, fig. 3, 1903.—BARNES and McDUNNOUGH, Check list of the Lepidoptera of Boreal America, No. 969, 1917.—BONNIWELL, The Lepidopterist, vol. 2, p. 85, 1918.—STRAND, Lepidopterorum catalogus, pt. 22, p. 279, 1919.—SEITZ, Die Gross-Schmetterlinge der Erde, vol. 6, p. 315, pl. 40c, 1919.—BARNES and LINDSEY, Ent. News, vol. 32, p. 297, 1921.—MCDUNNOUGH, Check list of the Lepidoptera of Canada and the United States of America (Part 1, Macrolepidoptera), No. 1084, 1938.

*Male genitalia*.—Lateral projection of harpe broader than portion of harpe beyond it, bent toward base; distal end of harpe not greatly dilated, somewhat compressed, slightly excurved. Anellus long, narrower distally than proximally. Aedeagus with broad, flattened, distolateral flap. Vinculum narrow, bluntly pointed, with long, narrow, lateral, winglike expansion. Uncus conical, elongate with apex narrowly flattened.

*Female genitalia*.—Median fleshy protuberance of ostium flattened, broad, with shallow indentation on posterior margin; lateral area membranous. Ductus seminalis weakly sclerotized anterior to its junction with the ductus bursae and bursa copulatrix.

Alar expanse, 43–70 mm.

*Distribution*.—Southwestern part of the United States and Mexico.

Arizona: Chiracahua Mountains, 2 ♂♂, 2 ♀♀ (June 12 to 26, H. G. Hubbard). New Mexico: High Rolls, 12 ♂♂, 9 ♀♀ (various dates; no collector); Las Cruces, ♂ (no date; T. D. A. Cockerell); Las Vegas, ♀ (no date or collector).

*Type*.—In the U. S. National Museum.

*Type locality*.—Las Vegas, N. Mex.

*Food plant*.—Virginia creeper.

*Remarks*.—This species is easily distinguishable from any other in the genus by the peculiar slate-colored markings of the fore wing and the yellow ground color of the hind wing.

A single specimen in the U. S. National Museum from Mexico City, Mexico, if correctly labeled, suggests that *zuni* has a much wider distribution than the above records from the United States indicate.